

REMARKS

Favorable reconsideration of the subject application is respectfully requested in view of the above amendments and the following remarks. Claims 28-33 and 36-51 are pending in the instant application, and claims 28-31, 36-39 and 44-47 are currently under consideration. Claim 28, 36 and 44 have been amended to more specifically recite certain aspects of the invention. Support for these amendments may be found throughout the specification and claims as originally filed, and it is urged that the amendments do not constitute new matter. It should also be noted that the above amendments are not to be construed as acquiescence with regard to the Examiner's rejections and are made without prejudice to prosecution of any subject matter removed or modified by this amendment in a related divisional, continuation or continuation-in-part application.

Rejection Under 35 U.S.C. § 112, First Paragraph

Claims 36-39 and 44-47 stand rejected under 35 U.S.C. § 112, first paragraph, on the alleged basis that the instant specification is not sufficiently enabling for a Smac polypeptide comprising an amino acid sequence having at least seven contiguous amino acid residues from at least residues 56-139 of SEQ ID NO:19 and of which up to 183 contiguous amino acid residues can be from residues 56-239 of SEQ ID NO:19, wherein said Smac polypeptide or peptide is capable of binding to at least "any portion" of an Inhibitor of Apoptosis protein. Specifically, the Action alleges that the claims encompass Smac polypeptides that the specification describes as being inactive in promoting caspase-3 activation. Furthermore, the Action asserts that it is unpredictable which of all possible seven contiguous amino acid residues of Smac residues 56-139 are capable of specifically binding to at least a portion of an Inhibitor of Apoptosis protein, in light of the specification disclosing that not any region of residues 56-139 is capable of activating caspase-3.

Applicants respectfully traverse this basis of rejection and submit that the skilled artisan is enabled to practice the full scope of the claimed invention, in light of the teachings of the specification and the general knowledge attributable to one having ordinary skill in the art. Applicants submit that the claims are drawn to isolated Smac polypeptides comprising functional

domains that bind to Inhibitor of Apoptosis (IAP) polypeptides. Applicants further submit that the instant specification teaches specific amino acid residues associated with two IAP-binding domains first identified by Applicants and described in the instant specification. For example, the specification teaches that the first seven residues of mature Smac are sufficient for binding to IAP and that a second region requiring at least a portion of residues 22-139 also binds IAP. Applicants submit that the skilled artisan, apprised by the instant specification of the regions of Smac that bind to IAP or a BIR domain thereof, could readily make and use the claimed polypeptides.

Applicants further submit that the skilled artisan could readily identify Smac peptides and polypeptides having the claimed characteristics. Applicants submit that screening Smac peptides and polypeptides for their ability to bind to IAP or a BIR domain thereof requires merely routine procedures, which are widely known in the art and described in detail in the instant specification (*see, e.g.*, Examples 2 and 3). As repeatedly stated by the Federal Circuit, “[e]nablement is not precluded by the necessity for some experimentation such as routine screening.” *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988), *citing Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384 (Fed. Cir. 1986), and *Atlas Powder Co. v. E.I. DuPont De Nemours & Co.*, 750 F.2d 1569, 1576 (Fed. Cir. 1984). Indeed, the Court recognized that a considerable amount of experimentation may be required, so long as it does not amount to undue experimentation. “[A] considerable amount of experimentation is permissible, if it is merely routine, or if the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed.” *Id.*, *citing In re Jackson*, 217 USPQ 804 (Bd. App. 1982). Applicants submit that the skilled artisan could readily determine whether any particular Smac peptide or polypeptide comprising at least seven contiguous residues of amino acid residues 56-139 was capable of binding to IAP or a BIR domain thereof using merely routine procedures and without undue experimentation.

Regarding the Action’s allegation that the claimed subject matter includes an inoperative species, Applicants respectfully submit that the claims contain a functional limitation that excludes inoperative species, *i.e.* the ability to specifically bind to at least a portion of an

IAP protein. Accordingly, inoperable species are excluded from the claims, and it necessarily follows that all claimed species are operable.

Nonetheless, Applicants submit that it is well established that the mere possibility that one or more Smac peptides or polypeptide comprising at least seven contiguous residues derived from amino acid residues 56-139 of SEQ ID NO:19 may be unable to specifically bind to an IAP or BIR domain thereof is, in itself, insufficient to support an assertion of non-enablement, since the existence of one or more inoperative species encompassed within a genus does not render claims to that genus non-enabled. On the contrary, all that is required is that the skilled artisan can rely on the guidance of Applicants' specification to achieve Smac peptides or polypeptides within the scope of the claims without undue experimentation. See, *e.g.*, *Atlas Powder Co. v. E. I. Du Pont de Nemours & Co.*, 224 U.S.P.Q. 409, 414 (Fed. Cir. 1984) stating that "[it is] not a function of the claims to specifically exclude possible inoperative substances." Thus, Applicants respectfully submit that even if certain recited Smac peptides or polypeptides were inoperative, that is, do not bind to an IAP or BIR domain thereof, it would not render the instant claims non-enabled by the specification, absent a showing by the Examiner that a skilled artisan would be unable to achieve such peptides or polypeptides through routine experimentation.

However, to expedite prosecution of the instant application and without acquiescence to this basis of rejection, claims 36 and 44 have been amended to recite that the at least seven contiguous amino acid residues are derived from at least residues 56-85 of SEQ ID NO:19, instead of being derived from at least residues 56-139 of SEQ ID NO:19. Applicants submit that support for this amendment is provided throughout the instant application, including, *e.g.*, on page 12, lines 1-4, and on page 17, line 18 through page 18, line 2. Applicants submit that the instant specification teaches that these residues correspond to amino acids 1-30 of mature Smac and that seven amino acid residues within this IAP-binding are sufficient for binding to IAP and BIR domains thereof (*e.g.*, page 44, lines 22-24).

In light of the above remarks and amendment, Applicants submit that the skilled artisan is fully enabled to practice the claimed invention and respectfully request reconsideration and withdrawal of the present basis for rejection.

Rejection Under 35 U.S.C. § 102(e)

Claims 28-31, 36-39 and 44-47 stand rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent No. 6,110,691. The Action alleges that the reference teaches a Smac polypeptide of SEQ ID NO:1 (amino acid residues 1-239). Furthermore, although the Action concedes that the reference does not teach that the Smac polypeptide is capable of specifically binding to the BIR domains BIR1 and BIR2, the Action asserts that binding to BIR domains is an inherent property of the claimed polypeptides. Specifically, the Action alleges that the wording of the claims could be interpreted to include full length Smac polypeptides, which the Action asserts are described in U.S. Patent No. 6,110,691.

Applicants respectfully traverse this basis of rejection and submit that the skilled artisan would understand the subject matter of the claims to exclude full length Smac polypeptides. Nonetheless, to expedite prosecution of the instant application, the claims have been amended for the purpose of providing additional clarity. The claims now clearly indicate that the claimed peptides and polypeptides comprise less than 184 contiguous amino acid residues derived from residues 56-239 of SEQ ID NO:19, thereby excluding full length Smac polypeptides. Accordingly, Applicants submit that U.S. Patent No. 6,110,691 fails to anticipate the claimed invention, which is directed to functional fragments of the Smac polypeptide that bind to at least a portion of an IAP polypeptide. Applicants submit that U.S. Patent No. 6,110,691 fails to teach or suggest any fragment of the Smac polypeptide that is capable of binding to at least a region of an IAP. Indeed, U.S. Patent No. 6,110,691 does not even disclose or recognize that Smac polypeptides bind IAP.

Applicants further submit that the claims are not anticipated by the cited reference based upon a theory that the disclosed full length Smac polypeptide inherently possessed the claimed functional feature of specifically binding to an IAP or BIR domain thereof. Applicants submit that anticipation requires that the same invention, including each element and limitation of the claims, was known or used by others before it was invented by the patentee. *Hoover Group, Inc. v. Custon Metalcraft, Inc.*, 66 F.3d 299, 302 (Fed. Cir. 1995). Indeed, the single reference must describe and enable the claimed invention, including all claim limitations, with

sufficient clarity and detail to establish that the subject matter already existed in the prior art and that its existence was recognized by persons of ordinary skill in the field of the invention. *Crown Operations International Ltd. v. Solution Inc.*, 289 F.3d 1367, 1375 (Fed. Cir. 2002); *In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990) ("the reference must describe the applicant's claimed invention sufficiently to have placed a person of ordinary skill in the field of the invention in possession of it").

Applicants respectfully submit that the Action fails to demonstrate that the recited limitation that the polypeptides bind to an IAP or BIR domain thereof was known by others before invention by Applicants. Accordingly, Applicants submit that U.S. Patent No. 6,110,691 does not describe and enable the claimed invention and, therefore, cannot anticipate the instant claims.

In light of these remarks and further in view of the clarifying amendments, Applicants respectfully submit that this reference does not anticipate the claimed invention and respectfully requests that this basis of rejection be withdrawn.

The Commissioner is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

Applicants respectfully submit that all of the claims remaining in the application are now allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,

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